

**REMARKS**

Reconsideration is requested.

Claims 13-15 have been canceled, without prejudice. Claim 1 has been revised, without prejudice, to specify that the method involves dissolving doped carbon nanotubes, as described for example on page 6, lines 18-24 of the specification. Claim 16 has been added and is similar to claim 1. Moreover, the claims specify that the polar organic solvent is used to produce the stated dissolved phase, such as is described on page 3, lines 3-8 of the specification. No new matter has been added. Claims 1-12 and 16 are pending.

The Examiner has refused to initial the previously submitted PTO 1449 Form in the listing of the International Search Report as the Examiner is understood to believe the document is an "improper" reference.<sup>1</sup> A search of the PTO on-line patent search for issued patents (patents issued since 1976) listing "International Search Report" in the "Other References" field revealed a list of 47,647 patents. The following is a list of the first 50 of these patents by patent number and title:

D588,698 Disposable dental handpiece  
D588,693 Liquid dispensing syringe  
D588,610 Media device  
D588,363 Toothbrush  
D588,362 Toothbrush  
7,506,357 System and method for maintaining security in a distributed computer network  
7,506,307 Rules definition language  
7,506,304 Graphical data flow programming environment with first model of computation that includes a structure supporting second model of computation  
7,506,291 Test emulator, emulation program and method for manufacturing semiconductor device

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<sup>1</sup> See pages 2-3 of the Office Action dated November 25, 2008.

7,506,286 Method and system for debugging an electronic system  
7,506,285 Multi-dimensional analysis for predicting RET model accuracy  
7,506,280 Magnetic winding and method of making same  
7,506,267 Compose rate reduction for displays  
7,506,265 System and method for displaying images of virtual machine environments  
7,506,261 Remote operation system, communication apparatus remote control system and document inspection apparatus  
7,506,260 Method and system of providing browser functionality through a browser button  
7,506,232 Decompressor/PRPG for applying pseudo-random and deterministic test patterns  
7,506,195 Operation management method and operation management server  
7,506,163 Methods and apparatuses for security visualization  
7,506,161 Communication session encryption and authentication system  
7,506,151 System for managing boot-up of target computers  
7,506,145 Calculated values in system configuration  
7,506,144 Dynamic pre-operating system billboard service  
7,506,124 Apparatus and methods for facilitating data tapping with host clustering in a storage area network  
7,506,123 Method and system for performing memory copy function on a cell processor  
7,506,116 Maintaining and using information on updates to a data group after a logical copy is made of the data group  
7,506,113 Method for configuring compensation  
7,506,109 Recording medium having data structure for managing at least a data area of the recording medium and recording and reproducing methods and apparatuses  
7,506,072 Web browser as web service server in interaction with business process engine  
7,506,057 Method for establishing a paired connection between media devices  
7,506,047 Synthetic transaction monitor with replay capability  
7,506,044 Method and system for discovery of remote agents  
7,506,034 Methods and apparatus for off loading content servers through direct file transfer from a storage center to an end-user  
7,506,011 System and apparatus for optimally trading off the replication overhead and consistency level in distributed applications  
7,505,998 Apparatuses and methods for dynamic creation of phase Gantt charts  
7,505,992 System, method and article of manufacture for updating content stored on a portable storage medium  
7,505,984 Systems and methods for information extraction  
7,505,980 System and method for controlling access to multiple physical media libraries  
7,505,969 Product placement engine and method

7,505,966 System and method for dynamically generating content on a portable computing device  
7,505,953 Performance monitoring of method calls and database statements in an application server  
7,505,950 Soft alignment based on a probability of time alignment  
7,505,925 System, medium, and method for providing financial account information over a network  
7,505,920 Methods and apparatuses for pay-per-call advertising in mobile/wireless applications  
7,505,919 Method and system for employment placement  
7,505,914 Method and system for providing advisory information to a field service provider  
7,505,889 Transcoding media system  
7,505,883 Computer simulation of body dynamics including a solver that solves in linear time for a set of constraints  
7,505,856 Battery test module  
7,505,854 Startup techniques for a digital flowmeter

Of the 47,647 patents revealed, the following list Vickie Kim, who is believed to be the present Examiner's Supervisor, as the Primary Examiner.

7,276,534 Carbon-substituted diketopiperazine delivery systems  
7,112,340 Compositions of and method for preparing stable particles in a frozen aqueous matrix

The undersigned believes that these results demonstrate the Patent Office has previously considered International Search Reports "proper" documents for consideration by Patent Office Examiners and to be listed on the face of issued patents.

Reconsideration of the Examiner's position in this regard is requested along with a return of an initialed copy of the previously filed PTO 1449 Form confirming the Examiner's consideration of the reference and that the reference will be listed on the face of any patent issuing from the present application.

The abstract has been revised to obviate the objection to same on page 3 of the Office Action dated November 25, 2008. A new Abstract page is attached containing the above-revised Abstract. Withdrawal of the objection is requested.

The claims have been amended to obviate the Section 112, second paragraph, rejection of claims 1-12. With regard to claim 6, the Examiner is requested to see, for example, page 3, lines 30-31 of the specification. The revisions to claim 1 find support, for example, in the passages of page 2, lines 21-24 and page 3, lines 3-8 of the specification. Claim 9 is supported, for example, by the disclosure spanning pages 3-4 of the specification. Withdrawal of the Section 112, second paragraph, rejection is requested.

The Section 102 rejection of claims 1-4 and 7 over Jouguelet et al. (Chemical Physics Letters 318 (2000) 561-564 "Controlling the electronic properties of single-wall carbon nanotubes by chemical doping" ) is traversed. Reconsideration and withdrawal of the rejection are requested in view of the above and the following distinguishing comments.

While the cited reference, along with reference [6] cited in the reference<sup>2</sup>, teach a method of producing reduced (i.e., doped) carbon nanotubes, the reference fails to teach the further method of the claimed invention relating to dissolving the reduced carbon nanotubes in a polar organic solvent to produce a dissolved phase of negatively charged nanotubes in the stated solvent. The cited art fails to teach or suggest that reduced nanotubes are soluble in organic solvents, as claimed.

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<sup>2</sup> Petit et al, Chemical Physics Letters 305 (1999) 370-374 (of record).

The THF (i.e., solvent) used in the process of the cited reference produces a suspension of reduced (i.e., doped) carbon nanotubes which may be separated by filtration, as described for example in Example 1 of the present specification. The cited art does not teach or suggest however a method of the claimed invention.

Withdrawal of the Section 102 rejection is requested.

The Section 103 rejection of claims 5 and 12 over Jouguelet et al. (Chemical Physics Letters 318 (2000) 561-564 "Controlling the electronic properties of single-wall carbon nanotubes by chemical doping" ) and "Ajayan et al."<sup>3</sup> ((Ajayan I – which is referred to herein as Viswanathan) Journal of American Chemical Society (2003), 125, 9258-9259, "Single-step in situ synthesis of polymer-grafted single-wall nanotube composites") is traversed. Reconsideration and withdrawal of the rejection are requested in view of the following distinguishing comments.

Claims 5 and 12 depend from claim 1. The Examiner has acknowledged that claim 1 is patentable over Jouguelet and Viswanathan. The additional details of claims 5 and 12 are equally patentable over the cited combination of art. Withdrawal of the Section 103 rejection is requested.

Additionally, the applicants note that Viswanathan relates to attachment of polystyrene chains to full length "pristine" SWNTs (single wall nanotubes.<sup>4</sup> The process of Viswanathan "requires no nanotube pretreatment and works with as-produced SWNTs."<sup>5</sup> The above noted Petit reference, which describes the process of

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<sup>3</sup> The reference authors are Viswanathan et al. and the Examiner is requested to correct the record in this regard by at least mailing a revised PTO 892 Form listing the proper first author.

<sup>4</sup> See ¶12, left column, page 9258 of Viswanathan.

<sup>5</sup> Id.

Jouquelet<sup>6</sup>, describes the nanotubes prior to exposure of naphthalene-lithium, as "pristine material".<sup>7</sup> Viswanathan therefore teaches away from the reduction (doping) required by the cited primary reference – Jouquelet.

Viswanathan teaches production of SWNTs by a gas phase CVD process (i.e., the HiPCO process) "without further purification, as purification procedures might introduce functionalities that hinder carbanion formation".<sup>8</sup> The reduction and purification process of the present claims therefore, which may be used to purify nanotubes, would have been contrary to the teachings of Viswanathan.

The cited art would not have been combined by one of ordinary skill in the art as the methods of the cited art are believed to be contrary to each other and to the claimed invention.

The methods of claims 5 and 12 would not have been obvious over the cited combination of art.. Withdrawal of the Section 103 rejection of claims 5 and 12 is requested.

The Section 103 rejection of claim 8 over Jouguelet et al. (Chemical Physics Letters 318 (2000) 561-564 "Controlling the electronic properties of single-wall carbon nanotubes by chemical doping" ) and WO 2004/0463031 (Ajayan II) is traversed. Reconsideration and withdrawal of the rejection are requested in view of the above and the following distinguishing comments.

Claim 8 depends from claim 1. The Examiner has acknowledged that claim 1 is patentable over Jouquelet and Ajayan II. The additional details of claim 8 are equally

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<sup>6</sup> Cited as reference [6] of Jouquelet.

patentable over the cited combination of art. Withdrawal of the Section 103 rejection is requested.

The deficiencies of Jouquelet are noted above. Ajayan II fails to cure the deficiencies noted above with regard to Jouquelet. The Examiner appears to have only relied on Ajayan II to teach the use of a multi-walled nanotube in place of a SWNT of the primary reference.<sup>9</sup> The reference is not believed to provide a suggestion or motivation to have made the claimed invention.

The applicants further understand the secondary reference to describe functionalization of nanotubes with an ionizing agent (e.g., alkyl lithium) in which the ionizing agents becomes grafted onto the nanotube surface, followed by polymerization with a variety of monomers (e.g., vinyl, acrylic monomers).

The cited art would not have been combined by one of ordinary skill in the art as the methods of the cited art are believed to be contrary to each other and to the claimed invention.

The methods of claim 8 would not have been obvious over the cited combination of art.. Withdrawal of the Section 103 rejection of claim 8 is requested.

The Section 103 rejection of claim 6 over Jouguelet et al. (Chemical Physics Letters 318 (2000) 561-564 "Controlling the electronic properties of single-wall carbon nanotubes by chemical doping" ) and "Zatti"<sup>10</sup> (hereinafter referred to as "Han") ("Functionalized Boron Nitride Nanotubes with Stannic Oxide Coating: A Novel

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<sup>7</sup> See first full paragraph, left column, page 372 of Petit.

<sup>8</sup> See ¶13, left column, page 9258 of Viswanathan.

<sup>9</sup> See page 8 of the Office Action dated November 25, 2008.

Chemical Route to Full Coverage" JACS (2003) 125, 2062-2063) and "Ajayan et al." (i.e., Viswanathan) Journal of American Chemical Society (2003), 125, 9258-9259, "Single-step in situ synthesis of polymer-grafted single-wall nanotube composites") is traversed. Reconsideration and withdrawal of the rejection are requested in view of the above and the following distinguishing comments.

Claim 6 depends from claim 1. The Examiner has acknowledged that claim 1 is patentable over the combination of Jouquelet, Han and Viswanathan. The additional details of claim 6 are equally patentable over the cited combination of art. Withdrawal of the Section 103 rejection is requested.

The applicants further note that the additional Han reference fails to overcome the deficiencies of the combination and contradictory references of Jouquelet and Viswanathan.

The applicants understand the cite Han reference to describe the coating of BN nanotubes with a thin layer of  $\text{SnO}_2$  (See page 2062 left column 4th paragraph). The Examiner points to page 2062 2nd paragraph to infer that Han suggests "functionalization of the BN nanotube surface by introducing foreign chemical species directly or indirectly attached to the BN nanotubes".<sup>11</sup> However, the sentence immediately following the passage relied upon by the Examiner shows that Han is not enabling in that regard:<sup>12</sup> Moreover, Han involves the coating of BN nanotubes (i.e., nanotubes lacking carbon atoms). The electronic structure BN nanotubes will be

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<sup>10</sup> The applicants note that the first author of the cited reference is "Han". Correction of the record by at least mailing a corrected PTO 892 is requested.

<sup>11</sup> See page 9 of the Office Action dated November 25, 2008.



understood by one of ordinary skill to be very different from that of carbon nanotubes.

The applicants believe that BN nanotubes cannot be reduced by methods similar to those used for carbon nanotubes.

The cited art would not have been combined by one of ordinary skill in the art as the methods of the cited art are believed to be contrary to each other and to the claimed invention.

The methods of claim 6 would not have been obvious over the cited combination of art.. Withdrawal of the Section 103 rejection of claim 6 is requested.

The Section 103 rejection of claims 9-11 over Jouguelet et al. (Chemical Physics Letters 318 (2000) 561-564 "Controlling the electronic properties of single-wall carbon nanotubes by chemical doping" ) and U.S. Patent No. 5,695,734 (Ikazaki et al) is traversed. Reconsideration and withdrawal of the rejection are requested in view of the following distinguishing remarks.

Claims 9-11 depend from claims 7 and 1. The Examiner has acknowledged that claims 7 and 1 are patentable over the cited combination of art. The additional details of claims 9-11 are equally patentable over the cited combination of art. Withdrawal of the Section 103 rejection is requested.

The deficiencies of Jouguelet are not cured by Ikazaki.

The applicants understand the secondary reference to describe a process for separating carbon nanotubes from graphite, which involves reducing a mixture of nanotubes and graphite with a "metal compound", which leads to selective intercalation

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<sup>12</sup> "Despite this obvious potential, to our knowledge, no successful methods have been reverted

of metal ions between graphite sheets (i.e., there is no reaction with the carbon nanotubes). According to Ikazaki et al., subsequent oxidation of the resulting mixture allows to selectively burn the intercalated graphite, leaving the carbon nanotubes untouched. The teachings of the Ikazaki and Jouguelet references are believed to be incompatible.

The methods of claims 9-11 would not have been obvious over the cited combination of art.. Withdrawal of the Section 103 rejection of claims 9-11 is requested.

The claims are submitted to be in condition for allowance and a Notice to that effect is requested.

The Examiner is requested to contact the undersigned, preferably by telephone, in the event anything further is required.

Respectfully submitted,

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for coating and thus functionalizing BN nanotubes".